

What is claimed is:

1. A method for obtaining an accurate mixing ratio of a liquid mixture, comprising:

mixing at least two different liquids having a predetermined  
5 mixing ratio by setting a switching timing of switch valves for transferring the at least two different liquids;

determining an actual mixing ratio of the at least two different liquids mixed together;

calculating a mixing ratio error as a difference between said  
10 actual mixing ratio and said predetermined mixing ratio;

storing said mixing ratio error; and

correcting the switching timing of the switch valves for the  
at least two different liquids based on said stored mixing ratio  
error.

15 2. A method according to claim 1, wherein said at least two different liquids are sequentially transferred by opening and closing the switch valves for the liquids.

20 3. A method according to claim 2, wherein said switching timing of the switch valves is corrected for subsequent transfer of the at least two different liquids.

4. A liquid transfer device for transferring a mixture of at least  
25 two different liquids as a mobile phase for an analytical apparatus, comprising:

a plurality of switch valves connected to said at least two different liquids, respectively;



a pump connected to said switch valves for transferring the liquids to prepare a mixture thereof;

a mixing ratio calculation portion for determining an actual mixing ratio of the mixture mixed at a predetermined mixing ratio;

5 a mixing ratio error calculation portion for calculating a mixing ratio error as a difference between said actual mixing ratio calculated by said mixing ratio calculation portion and the predetermined mixing ratio electrically connected to said mixing ratio calculation portion;

10 a memory portion for storing said mixing ratio error calculated by said mixing ratio error calculation portion electrically connected to said mixing ratio error calculation portion; and

15 a valve-switching-timing correction portion for correcting a switching timing of the switch valves based on the mixing ratio error stored in said memory portion electrically connected to said mixing ratio error calculation portion, said memory portion, said position sensor and said plurality of switch valves.

20 5. A liquid transfer device according to claim 4, wherein said pump includes a pump chamber having an inlet connected to the switch valves and an outlet, a plunger located in the pump chamber, a cam connected to the plunger, a motor connected to the cam for reciprocating the plunger, and a position sensor connected to the  
25 motor for detecting a position of the plunger through the motor.

6. A liquid transfer device according to claim 5, further comprising a mixer for mixing the mobile phase connected to the



outlet of the pump, an injector portion connected to the mixer for injecting a sample into the mobile phase, a column portion for separating the sample connected to the injector portion, and a detector for detecting the sample connected to the column portion.

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7. A liquid chromatograph comprises:

10 a liquid transfer device having a low pressure gradient function, and a plurality of switch valves to be changed to switch liquids to be transferred at a predetermined timing for transferring the liquids sequentially as a mobile phase to have a predetermined mixing ratio;

15 a mixing ratio calculation portion for determining an actual mixing ratio of said mobile phase based on the predetermined mixing ratio;

20 a mixing ratio error calculation portion for calculating a mixing ratio error as a difference between said actual mixing ratio calculated by said mixing ratio calculation portion and the predetermined mixing ratio electrically connected to said mixing ratio calculation portion;

25 a memory portion for storing said mixing ratio error calculated by said mixing ratio error calculation portion electrically connected to said mixing ratio error calculation portion; and

a valve-switching-timing correction portion for correcting a switching timing of the switch valves based on the mixing ratio error stored in said memory portion electrically connected to said mixing ratio error calculation portion, said memory portion, said position sensor and said plurality of switch valves.



8. A liquid chromatograph according to claim 7, further comprising  
a detector for obtaining information of the actual mixing ratio of  
the mobile phase, said mixing ratio calculation portion calculating  
5 the actual mixing ratio based on a signal from said detector.

9. A liquid chromatograph according to claim 8, further comprising  
a mixer for mixing the mobile phase connected to the liquid  
transfer device, an injector portion connected to the mixer for  
10 injecting a sample into the mobile phase, and a column portion for  
separating the sample connected to the injector portion, said  
detector being connected to the column portion.